

ABSTRACT

1 A secure stent for maintaining a luminal opening constructed preferably as a tubular
2 structure of NiTi material or bioabsorbable polymers. The circumference of the tube is
3 preferably in the shape of a polygon in contrast to the circular or oval shape of a body lumen into
4 which the stent is to be placed. The polygon shape and ribs provides interference with the lumen
5 wall and resists stent migration. The diameter of the stent tube is configured with each end
6 enlarged providing flanges for interference with a lumen wall. The central portion of the stent is
7 also bulged out to an increased diameter to provide an enhanced lumen wall resistance to avoid
8 migration. In addition, the locking feature of a ribbed structure prevents the stent from
9 collapsing, and thereby maintains the lumen opening. The stent is preferably constructed from
10 polymers, including bioabsorbable polymers, and/or super elastic materials. The bioabsorbable
11 polymer construction aids removal by causing the tube diameter to collapse. Removal of the
12 stent can therefore be accomplished by simply grasping the proximal end of the stent.
13 Alternatively, a stent constructed entirely of bioabsorbable material will eventually be entirely
14 absorbed, avoiding the need for removal. Alternatively, the stent can be preferably constructed
15 of NiTi or other shape memory material and set in the desired shape at a high temperature.
16 Installation is accomplished by cooling the stent to the malleable Martensite state and winding it
17 on a small diameter mandrel of an insertion/removal tool. The compacted stent is then placed in
18 a probe and inserted in a body lumen, whereupon it is heated to an Austenite state where it
19 regains its spring tension, forcing it back toward the set shape. Removal is accomplished by
20 cooling the stent to the malleable Martensite state and pulling it out. If the selected material is
21 bioabsorbable, the stent generally does not have to be removed.